

ABSTRACT

Stabilizing catheters for delivery of one or more protein drugs to a patient. The stabilizing catheter embodiments of the invention maintain or preserve a biologically/pharmacologically active form of the protein drug for delivery to a site within the body. Particular embodiments include a tubing layered with a hydrophilic and mobile polymer that aids in the maintenance or preservation of an active conformer of the protein drug. These embodiments of the stabilizing catheter prevent site loss of protein drugs, such as insulin. Other embodiments include a tubing that is layered with a material that substantially prevents diffusion of small, insulin formulation-stabilizing molecules out from the catheter, as well as substantially prevents the diffusion of small, insulin formulation-destabilizing molecules into the catheter, during a period of insulin infusion. In effect, these embodiments of the stabilizing catheter maintain the stabilizing effect of a particular insulin formulation, and consequently, substantially prevents occlusions/deposits from being formed during a period set for insulin delivery. Still other embodiments are directed to a combination of these features of the stabilizing catheters of the invention.